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REMARKS

Claims 1-12, 14-27, 31-56, 58-71 and 73-86 are currently pending in the present application. In the November 19, 2009 Final Office Action, the Examiner rejected:

1. Claims 1-12, 14-27, 31-56, 58-71 and 73-86 under 35 U.S.C. §103(a) as being unpatentable over *Rabinowitz et al.* (U.S. Patent Pub. 2003/0179891) in view of *Tagami et al.*, (U.S. Patent No. 5,745,586).

Applicants have amended claims 1, 21 and 77 to further clarify what Applicants regard as the invention. No new matter has been introduced. Applicants respectfully request entry of the claim amendments. As to the claim rejections, Applicants respectfully traverse. Reconsideration of the pending claims is respectfully requested in light of the amendments and the remarks below.

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I. RESPONSE TO REJECTIONS OF CLAIMS 1-12, 14-27, 31-56, 58-71 AND 73-86 UNDER 35 U.S.C. §103(a)

Reconsideration of the rejection of Claims 1-12, 14-27, 31-56, 58-71 and 73-86 under 35 U.S.C. §103(a) as being unpatentable over *Rabinowitz et al.* (U.S. Patent Pub. 2003/0179891 – "Rabinowitz") in view of *Tagami et al.* (U.S. Patent No. 5,745,586 – "Tagami") is respectfully requested.

Independent claim 1, as amended, recites:

> An audio system comprising at least one loudspeaker, at least one loudspeaker location for the loudspeaker being selected based on a method for selecting the at least one loudspeaker location from potential loudspeaker locations, the method comprising:
>
> determining the potential loudspeaker locations;
>
> generating acoustic signals from at least one loudspeaker placed at the potential loudspeaker locations;
>
> recording transfer functions at a plurality of listening positions for the generated acoustic signals;
>
> modifying the transfer functions based on the potential loudspeaker locations so that predicted transfer functions are generated at at least two of the plurality of listening positions for each of the potential loudspeaker locations, the predicted transfer functions representing simulations for the potential loudspeaker locations;
>
> accessing a criterion by which to statistically analyze the predicted transfer functions;
>
> statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions; and
>
> recommending at least one loudspeaker location from the potential loudspeaker locations in order to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis.

In rejecting independent claim 1, the Final Office Action stated:

> "*Rabinowitz et al.* discloses an audio system comprising at least one loudspeaker, at least one loudspeaker location for the loudspeaker being selected based on a method for selecting the at least one loudspeaker location from potential loudspeaker locations in an audio system comprising: determining the potential loudspeaker locations (fig. 4: 47-52); generating acoustic signals from at least one loudspeaker placed at the potential loudspeaker locations (figs. 1, 5: 14 & 16; fig. 3: 20; paras 0010, 0021, 0027; microphone and speakers in various locations generate and pick up sounds from said

various locations); recording transfer functions at a plurality of listening positions for the generated acoustic signals (figs. 1, 5: 14 & 16; fig. 3: 20; paras 0010, 0021, 0027: microphone and speakers in various locations generate and pick up sounds from said various locations); modifying the transfer functions based on the potential loudspeaker locations so that predicted transfer functions are generated at at least two of the plurality of listening positions for each of the potential loudspeaker locations, the predicted transfer functions representing simulations for the potential loudspeaker locations (fig. 4: 48 & 52; paras 0030-0031; transfer function is calculated for at least two positions and checked for validity so that if the transfer function is not valid, adjustments are made and the function is calculated again until valid); and selecting at least one loudspeaker location to improve for the criterion at the at least two of the plurality of listening positions based on a statistical analysis (fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot/loudspeaker; (where statistically will be broadly interpreted as collection of data)); but fails to disclose **accessing a criterion** by which to statistically analyze the predicted transfer functions; statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions. However, *Tagami et al.* discloses a system that uses the concept of **accessing a criterion** (*Tagami et al.*, col. 8, lines 17-53; responsive sound quality) by which to statistically analyze a predicted signal across at least on frequency (*Tagami et al.*, figs. 3-4; col. 7, lines 50-67; col. 8, lines 17-53; the equalized audio function is analyzed by utilizing various criterion as disclosed in figs. 3-4). It would have been obvious to modify the statistical analysis of *Rabinowitz et al.* with the concept of accessing a criterion by which to statistically analyze a predicted signal across at least on frequency as taught in *Tagami et al.* (*Tagami et al.*, figs. 3-4; col. 7, lines 50-67; col. 8, lines 17-53; the equalized audio function is analyzed by utilizing various criterion as disclosed in figs. 3-4) for the purpose of enabling a listener to adjust an equalizer to obtain desired sound quality."

Applicants respectfully disagree with the positions set forth in the Final Office Action to the extent that they suggest that *Rabinowitz* teaches any analysis of "potential" loudspeaker positions. The focus of *Rabinowitz* relates to equalization of an audio system, rather than recommendation of loudspeaker locations from potential loudspeaker locations. In particular, *Rabinowitz* teaches equalization calculation circuitry 18 that "furnishes an equalization pattern signal appropriate to achieve a desired frequency response, and stores the equalization pattern signals in memory 20." Paragraph [0022]. The speakers in *Rabinowitz* are fixed and unmovable. Therefore, there is no teaching, or even any suggestion, to determine "potential" loudspeaker positions, and analyze predicted transfer functions in order to recommend a loudspeaker location from a plurality of potential loudspeaker positions.

In *Rabinowitz*, the loudspeaker positions are preselected and unchangeable. The Final Office Action's citation to elements 47-52 of Figure 4 of *Rabinowitz* as teaching determining potential loudspeaker locations is misplaced. Additionally, any citation to the operation of *Rabinowitz* being "used to obtain the sweet spot/loudspeaker" is clearly incorrect. The discussion relating to a "sweet spot" in *Rabinowitz* is for the **listening position** and not for recommending a loudspeaker location from potential locations. The Final Office Action fundamentally misconstrues the discussion of a "sweet spot" in the *Rabinowitz* reference. This is evident by a close reading of *Rabinowitz*, an excerpt of which is reproduced below:

> The several equalization patterns may also represent different "modes," for example a "party mode" in which the equalization pattern in configured to provide a pleasing frequency response throughout the listening area, or a "sweet spot" mode, in which the equalization pattern is optimized for a specific listening position. Paragraph [0027]

In addition, *Rabinowitz* provides no teaching or suggestion of "modifying the transfer functions based on the potential loudspeaker locations so that predicted transfer functions are generated at at least two of the plurality of listening positions for each of the potential loudspeaker locations." The Final Office Action alleges that *Rabinowitz* teaches this limitation, stating the following:

> *Fig. 4; 48, 52; paras 0030-0031; transfer function is calculated and checked for validity so that if the transfer function is not valid, adjustments are made and the function is calculated again until valid*

However, the *Rabinowitz* reference is clear that the blocks 48 and 52 relate to **actual** transfer functions recorded - not predicted transfer functions. Moreover, there is absolutely no suggestion in *Rabinowitz* of "the predicted transfer functions representing simulations for potential loudspeaker locations."

As seen in paragraphs 0030-0031 and blocks 47-52 in Figure 4 of *Rabinowitz*, the reference actually describes the following sequence: move a microphone to a first listening location (block 47); record the transfer function at the first listening location and validate the recorded transfer function (block 48); move the microphone to the next listening location (block 50); and record the transfer function at the first listening location and validate the recorded transfer function (block 52). Thus, any discussion in the *Rabinowitz* reference in blocks 48 and

52 are solely directed to recorded (not predicted) transfer functions. *Rabinowitz* wholly fails to teach or suggest predicting transfer functions at multiple listening positions and certainly makes no suggestion of predicted transfer functions representing simulations for the potential loudspeaker locations, as recited in claim 1.

Claim 1 further recites "accessing a criterion by which to statistically analyze the predicted transfer functions," "statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for the at least two of the plurality of listening positions" and "recommending at least one loudspeaker location from the potential loudspeaker locations in order to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis."

First, *Rabinowitz* does not teach statistically analyzing predicted transfer functions that represent simulations for potential loudspeaker locations. The Final Office Action reasons that "statistically will be broadly interpreted as collection of data." Applicants disagree. The statistical analysis requires an "analysis." Mere collection of data does not constitute any sort of analysis. Moreover, apart from the *Rabinowitz* reference failing to teach or suggest generating "predicted" transfer functions at multiple listening positions, the *Rabinowitz* reference further fails to statistically analyze predicted transfer functions for at least two of the plurality of listening positions – in which the predicted transfer functions represent simulations for potential loudspeaker locations.

Additionally, the Final Office Action concedes (at page 4) that *Rabinowitz* fails to teach "accessing a criterion by which to statistically analyze the predicted transfer functions and statistically analyzing using the criterion across at least one frequency of the predicted transfer functions for at least two of the listening positions." As with *Rabinowitz*, the *Tagami* reference also fails to access a criterion to statistically analyze predicted transfer functions which represent simulations for potential loudspeaker locations. *Tagami* describes a system to control sound quality using a computer model that constitutes a quantitive counter-relationship between the physical characteristics of a sound reproduction apparatus and the psychological quality felt by a listener. (*Tagami*; column 1, lines 55-60). *Tagami* does not teach or suggest analyzing or selecting potential loudspeaker locations. *Tagami* does not relate to determining potential loudspeaker locations in any way. The citations to Figs. 3 and 4 of *Tagami* in the Final Office Action simply relate an example appraisal sheet used for listener evaluation of certain sound quality adjectives and data analyzed for correlation coefficients for the respective sound quality adjectives. *Tagami* certainly does not teach or suggest using a criterion to statistically analyze predicted transfer functions representing simulations for potential loudspeaker locations. Accordingly, there is no basis to combine *Tagami* with *Rabinowitz*, and any such combination, *arguendo*, would not result in the invention recited in claim 1.

Therefore, independent claim 1 is patentable over the cited art. Further claims dependent on claim 1 are patentable at least by virtue of dependence on claim 1.

A. Independent Claim 12

Independent claim 12 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, with the predicted transfer functions representing simulations for the potential loudspeaker locations and statistically analyzing the predicted transfer functions using a criterion across a frequency of the predicted transfer functions. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 12 is patentable over the cited art. Further, the claims that depend on claim 12 are patentable at least by virtue of their dependence on claim 12.

B. Independent Claim 21

Independent claim 21 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, statistically analyzing the predicted transfer functions using a criterion, the predicted transfer functions representing simulations for the potential loudspeaker locations, and recommending at least one of the potential loudspeaker locations based on the statistical analysis in order to improve the criterion at the at least two of the plurality of listening positions. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 21 is patentable over the cited art. Further, the claims that depend on claim 21 are patentable at least by virtue of their dependence on claim 21.

C. Independent Claim 23

Independent claim 23 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, representing simulations for the potential loudspeaker locations, the predicted transfer functions statistically analyzing the predicted transfer functions using a criterion, and selecting at least one loudspeaker location to improve the criterion at the at least two of the plurality of listening positions based on the statistical analysis. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 23 is patentable over the cited art. Further, the claims that depend on claim 23 are patentable at least by virtue of their dependence on claim 23.

D. Independent Claim 53

Independent claim 53 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, the predicted transfer functions representing simulations for the potential loudspeaker locations, and statistically analyzing the predicted transfer functions using a criterion. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 53 is patentable over the cited art. Further, the claims that depend on claim 53 are patentable at least by virtue of their dependence on claim 53.

E. Independent Claim 73

Independent claim 73 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, the predicted transfer functions representing simulations for the potential loudspeaker locations, and statistically analyzing the predicted transfer functions using a criterion. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 73 is patentable over the cited art. Further, the claims that depend on claim 73 are patentable at least by virtue of their dependence on claim 73.

F. Independent Claim 74

Independent claim 74 recites generating predicted transfer functions as a plurality of listening positions for the potential loudspeaker locations, the predicted transfer functions representing simulations for the potential loudspeaker locations, and statistically analyzing the predicted transfer functions using a criterion. As discussed above, *Rabinowitz* and *Tagami* fail to teach or suggest these limitations. Therefore, independent claim 74 is patentable over the cited art. Further, the claims that depend on claim 74 are patentable at least by virtue of their dependence on claim 74.

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CONCLUSION

Favorable consideration is respectfully requested in view of the foregoing amendments and remarks.

The Commissioner is authorized to charge any additional fees that may be required, or credit any overpayment, to our deposit Account No. 50-2542. A copy of this sheet is enclosed.

Respectfully submitted,

Dated: 11/8/10

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